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**NOTES ON COUNTING AND MEASURING AMONG THE
ESKIMO OF POINT BARROW.***

BY JOHN MURDOCH.

From September, 1881, to August, 1883, the writer was stationed in the immediate neighborhood of the large Eskimo villages at Cape Smyth and Point Barrow, Arctic Alaska, as a member of the International Polar Expedition, and had the good fortune to become intimately acquainted with a large number of their interesting inhabitants.

These Eskimo have had comparatively little intercourse with civilized men, as it is only within the last thirty-five years, or since the time when H. M. S. "Plover" passed two winters at Point Barrow as a depot ship, during the great Franklin search expeditions, that the American whalers have resorted to that region. Before the time of the Franklin search they had seen white men upon only two occasions, namely, when Elson, in the "Blossom's" barge, discovered and named Point Barrow, in 1826, and when Thomas Simpson, coming from the Mackenzie river, reached the same point in 1837.

Consequently they were but little changed from their primitive condition of culture, and retained their language almost in its original purity. In the process of collecting linguistic material among them, some interesting points were discovered in regard to their methods of counting and measuring, and these have been brought together in the present paper.

The language spoken at Point Barrow is sufficiently like that of the Greenlanders and other eastern Eskimo to be readily understood by them. This fact has been already pointed out by various writers. So far as I have been able to ascertain, the chief phonetic difference between the two dialects, apart from the fact that the vowel sounds are frequently different in words otherwise identical, appears to be that a surd consonant in Greenlandic, especially at the end of the word, is represented by the cognate nasal at Point Barrow, and that the so-called "fricative lingual" *ss* (pronounced *sz* or like the

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French *j*) of the Greenlandic becomes a true rolled *r*. Bearing these phonetic changes in mind, the resemblance of the Point Barrow system of numeration to that of the other dialects is very striking.

It was not easy to obtain any accurate information about the numeral system of these people, since in ordinary conversation they are not in the habit of specifying any numbers above five. Six and all higher numbers are ordinarily spoken of as *amadráktúk*—"many." The same has been noticed among other Eskimo. For example, Captain Parry speaks of "the imperfect arithmetic of these people (the natives of Fury and Hecla Straits), which resolves every number above ten into one comprehensive word" (Second Voyage, p. 549).

They have, however, a series of numerals running at least as high as one hundred, most of which seem to be but rarely used. This agrees with the observations of Pastor Brodbeck among the East Greenlanders in 1882—"Zählen können die heidnischen Grönländer nur mangelhaft, über 20 hinaus versteigen sie nicht gern" (Nach Osten, p. 42). Those most frequently used are the words for ten, fifteen, and twenty. We did not succeed in collecting many of the other high numerals, and many of them appear to be somewhat cumbrous periphrases, which might be invented on the spur of the moment for expressing quantities which were appreciated, but for which there existed no single definite word.

The first five of the numerals and the word for ten are essentially the same as what are called the "real numerals" in the Greenland dialect, and the remainder appear to be made by repeating these numerals in connection with "part-words" (*theilwörter*), which indicate on which hand or foot the counting is done (see Kleinschmidt, *Groenlandische Grammatik*, § 42, p. 37). Together they form the series of cardinal numerals, which, as far as we could learn, are used only in concrete numbers, in the sense of numeral adjectives. The "real numerals" are:

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|---------------|------------------|-------------|-----------|
| 1. Ata'uzik, | corresponding to | Greenlandic | atausek. |
| 2. Ma'dro, | " | " | mardluk. |
| 3. Pi'ñasun, | " | " | pingasut. |
| 4. Si'saman, | " | " | sisamat. |
| 5. Tū'dlemūt, | " | " | tatdlimat |
| 10. Kodlin, | " | " | kulit. |

The "part-words" were not obtained very accurately, and are used in a somewhat different way from the Greenland method. Akbīnīgīn, or akbīnīdīgīn, appears to be a form of arfinek "on the second hand," but seems to have a more generalized meaning—*i. e.*, "on the next hand or foot." Six is therefore expressed in full "atautyimīñ akbīnīgīn tudlimūt(t)," "five (and) once on the next" (or if tudlimūt is derived, as has been suggested, from talek, the arm, "one hand and once on the next"), or "atautyimīñ akbī'nīgīn," or simply "akbī'nīgīn," when a Greenlander would say "arfinek-atausek, once on the next hand." In the same manner seven is "twice on the next," "madro'niñ akbī'nīgīn," and eight "three times on the next," "piñas'unīñ akbī'nīgīn." Nine, however, is formed differently, being kodlinotai'la, which appears to mean "that which has not its ten." Ten, kod'lin (kultit) is supposed to be derived from kut or kule, "the upper part," referring to the number of digits on the hands of a man.

The intermediate phrases "one on the first foot," &c., for eleven, twelve, and so on, were never heard, but instead of "five on the foot" for fifteen (made in Greenlandic with the "part-word" *arkanek* or *isighkane*) we found what appears to be a "real numeral" *akimi'a*, not occurring in the other dialects. From this word is sometimes made a word for fourteen, *akimixotaityuña*, "I have not fifteen." Twenty, *inyui'na* means "a man completed" (from *i'nu* [G. *inuk*] a man, and *inârpâ* to complete it), meaning that in counting twenty we use all the fingers and toes of one man. The expression in Greenland is slightly different from this, being *inuk nâvdlugo*, "a man come to an end." Twenty-five and thirty are "*inyui'na tudlimūtiniñ akbīnī'dīgīn*," "twenty and five times on the next," and "*inyui'na kodliniñ akbīnī'dīgīn*," twenty (and) ten times," &c. Thirty-five is "*inyui'na akim'iāmiñ āipālīñ*," "twenty accompanied by one fifteen times." Forty is "two twenties," *madro inyui'na* or "*madrolipi'a*." The last part of the latter word appears again in *tūdlimūtibi'a*, one hundred, and perhaps is another phrase for "twenty." In the word for 100 the first part is the "subjective" or possessive form of *tūdlimūt*, five. The expressions in Greenlandic and other Eskimo dialects for these higher numbers are very different, which is pretty strong evidence that they have been developed since the separation of the Eskimo into their different branches. For example, in Greenlandic twenty-five is

inûp aipagsâne tatdlimat, "five on the second man," and thirty is "ten on the second man," "*inûp aipagssane kulit*." In the Mackenzie dialect these two numbers are respectively *iglut talle-matopk* and *innok kpolinik-tchikpalik*.

On the other hand, the "real numerals" are wonderfully alike in all the vocabularies that have been collected, showing that before their separation the Eskimo were in the habit of reckoning at least to five.

It is evident from the cumbrous forms of the higher numerals that any arithmetical processes are difficult if not impossible. Mr. Richard Cull, in an article describing three Eskimo brought to England from Cumberland Gulf, in 1854 (published in the *Journal of the Ethnological Society of London*, v. 5, 1856, pp. 215-225), goes to work quite elaborately to use the numerals he learned from them in various arithmetical processes. He shows that addition and subtraction, and even multiplication and division, can be performed with these numerals, but the processes are exceedingly cumbersome, and, so far as I can learn, entirely foreign to Eskimo modes of thought.

The Point Barrow natives, however, appear capable of a sort of crude addition, since in counting objects they divide them into groups of five and obtain the sum total from the number of these groups. In counting up to five, the ordinal numerals are used, as in the other dialects. With the exception of *ai'pa*, "second," which, as in Greenlandic, means "his companion" (viz., the companion of the first), these are the cardinal numbers with the "suffix" of the third person, which indicates that the word to which it is applied belongs to something else. Kleinschmidt's explanation of this usage is that each ordinal is supposed to be the property of the preceding. For instance, third is "[the two] its third," fourth is "[the three] their fourth," and so on. "First," then, in the Point Barrow dialect, must mean "their first," referring to those that follow. In Greenlandic and other dialects a different word is used for first, namely, *sujugdlek* (with its dialectic variants), "the foremost." This word is not easily recognized in the form in which it is found at Point Barrow, *sibwudli*, where we only heard it used as the name of the star Arcturus, but the form of the word, *tçivulepk* [*tsivulek*], in the Mackenzie River dialect, connects the two widely distant forms.

The ordinals at Point Barrow are as follows :

Atau'zia, first.

Ai'pa, second (Gr., aipâ).

Piñayua, third (pingajuat).

Si'sama, fourth (sisamât).

Tûdlima, fifth (tatdlimât).

The question "How many?" is frequently asked in the form "How many times?" [sc. is the object repeated], using the *Modalis* "kapsi'niñ." The numeral in the answer is then in the same case, "atau'tyimiñ," "madro'niñ," &c.

Methods of measuring space appear to be in the most primitive state. Our vocabulary contains no words indicating any standard of length or of size, and there appear to be none in use among other Eskimo. Of late years, however, in their dealings with the whites the Point Barrow people have learned to measure calico, drilling, &c., by the fathom—that is, the length from tip to tip of the outstretched arms.

Time is measured by the sun when it is visible, or by some of the stars at night. For instance, they say "We started when the sun was yonder (in the heavens) and travelled till it was yonder." Arc-turus, Sibwu'dli, is the time-piece of the seal-netters. When this star has passed over to the east they know that dawn is at hand and that netting is nearly over.

The length of a journey is reckoned by the number of "sleeps" (compare Parry, 2d Voyage, p. 556), and time is sometimes reckoned by the moon. For instance, they told us that "when this moon is gone and the next moon is little the whales will come."

We learned three names for seasons of the year—u'kio, winter, and u'piña and upiñaksa, warm weather. These words correspond to the Greenlandic upernâk, spring, and upernagssak, early spring.

Dr. John Simpson, R. N., who was the surgeon of the depot ship "Plover," and who published a very accurate sketch of the Eskimo of Point Barrow ("Observations on the Western Eskimo and the Country They Inhabit," originally printed as an appendix to the report of the commander of the "Plover" in the Parliamentary Reports for 1855, and reprinted in "A Selection of Papers on Arctic Geography and Ethnology," prepared by the Royal Geographical Society for the English Arctic Expedition in 1875, pp. 233-275), states that the year is divided into four seasons, and the names we

obtained correspond to those he gives for "late winter" and "early summer," or spring and summer.

We obtained with some difficulty the names of nine moons or lunar months of the year, but were told that for the rest of the year "there was no moon, only the sun." Dr. Simpson, however, obtained names for all twelve moons. The names of these moons were given differently by different informants, and do not wholly agree with those given by Simpson. It is quite likely that they are not invariable, and may be going out of general use. They begin to reckon the months from the time when the women begin sewing upon deer-skins, in the autumn, according to Simpson, starting with the first new moon after Elson Bay freezes over. They are as follows:

1. Su'dlivwiñ (Shud'-le-wing, Simpson), "the time for working—i. e., sewing."

2. Su'dlivwiñ ai'pa (shudlewing aipa), "the second time for sewing," or su'dlivwiñ kiñu'lia, "the succeeding sewing-time."

3. Kaibwid-wi (Kai-wig'-win), roughly speaking, December, the time of the great dances. Dr. Simpson's form of this name, which he translates "rejoicing," appears to be more correct than the one obtained by us, since "kaiwi'gwiñ" (from Gr. kâvigpok) would mean "the time for going round in a circle" (as in the dance). The name probably should be translated "the time for dancing."

4. Ida'sugaru (Ir-ra-shu'-ga-run, "great cold") is the dark mid-winter moon, at the end of which the sun comes back—about January 23. The name appears to be derived from G. issik, cold; but I have been unable to analyze the compound. It is also called sūkûnyatyia (sha-ke-nât-si-a), "little sun," and sūkûnyasúgaru.

5. Audlâktovwiñ (au-lak'-to-win), "the time for starting out" (to the deer-hunt), from audlâkto, to start. I am confident that Simpson was wrong in placing this moon before the preceding, as the deer-hunting parties certainly do not start till the February moon after the sun has returned.

6. Sûksilâbwi (e-sek-si-la'-wing), the next moon (March). This word, of which Doctor Simpson's form appears to be more correct than ours, seems to mean "the time for starting to come home."

7. Umisûrbwiñ (kat-tet-â-wak, returning for whales), "the time for making ready the boats" (April).

8. Kaûkerbwiñ (ka-wait-piv'-i-en, birds arrive) (May) appears to mean "the time for fowling," from an apparent variant of kaûwe, fowl.

9. Yögniabwiñ (ka-wai-niv'-i-en, birds hatched), the time for bringing forth—*i. e.*, laying eggs" (June).

As already stated, we learned no names for the other three moons.

They have definite words for to-day, and several preceding and following days. "To-day" is *kûñmû'mi* (there are other expressions, but this was the one commonly used in their intercourse with us). This word, which is evidently in what Kleinschmidt calls the *localis* case, does not appear in Greenlandic, where the expression used is *uvdlume*, "in the [present] day." "To-morrow" is *ublaxo* or, perhaps more properly, *ublákun* (literally, "in the morning," a curious coincidence with the German "*morgen*"), and "yesterday," *unúñ-mûn* (literally, "when it was evening"). "Day before yesterday" and "day after to-morrow" are both called by the same name, *ikpû'ksa* (which is the same as the Greenlandic *igpagssak*, "yesterday"), and the third day from the present either way, with all preceding or following days for a short period, are called *tsfa*. This is the same as the Greenlandic *ivsak*, "some days ago." For long periods in the past (we were given to understand more than four years ago) they say *aipâni* (literally, "in the other [sc. time]"). For very ancient times, beyond the memory of living man, they say *adrâni*. Future time was generally referred to as *nanâko*, *nanâkun*, "by-and-by," or when some expected event, like the going of the ice or the coming of the ships, should happen.

It will be seen that the expressions which they use for past time are too vague to render it possible to learn the date of any event in their history or traditions, unless it can be referred to the time of the Plover's visit, beyond which we have no well-defined date with which they are acquainted.

THE ABORIGINAL BARK-PEELER.—In several archæological museums of Europe, notably in the Royal Museum, in Copenhagen, implements of bone are to be seen, often made of a rib, whose function has not been known. The implement referred to is sharpened to a wedge-shaped edge at the lower extremity, the body is slightly bent along its entire length, and the upper end is rounded for a handle.

Implements of precisely similar form are now in use by the Indians of the Pacific coast of America, from Oregon to Alaska, for peeling bark from the cedar trees. Doubtless similar tools were formerly in

use in the birch-bark country and in South and Central America, where a kind of rude tapa cloth was beaten from the bark of the lace-bark tree (*Lagetta lintearia*).

One specimen from the Tulalip Agency, in Washington Territory, is made of elk antler, sixteen inches long and sharpened at either end. The Indians of Queen Charlotte Islands and the adjoining mainland employ a great many smaller peelers to take off large slabs of bark in an unbroken condition for the roofs of their houses. These implements are less than a foot long and are made of the ribs of the deer.

The process of bark-peeling is a very ingenious one. A tree is hacked around quite through the bark in furrows about four feet apart. A vertical slit is also made. Then, by means of a series of the peelers, the bark is lifted from the tree and kept in flat form by a series of plugs and props until it dries. It remains flat after drying and is cut into sections suitable for shingles. For taking off the bark to be made into cords, baskets, cinctures, etc., the same amount of shaping is not necessary, but the peeler is universally used in separating the bark. The birch-bark canoe was formerly employed along our northern boundary wherever the birch tree was abundant, and it would be well to study the method of separating the bark from the trees.

O. T. MASON.

A VERY ANCIENT TOMAHAWK.—It is generally known that the iron tomahawk with a pipe on the blunt end is an invention of the white man, and counts for nothing in the study of primitive industries. In the ethnographic collection in Copenhagen is an antique-looking specimen with a blade of stone, resembling a diminutive specimen of our common two-ended pick, or more precisely, like one of those blades that are fitted into a socket on the handle and have no eyelet. The stone blade in question is lashed to a worm-eaten handle by means of rawhide just like an Eskimo pick. In the collection of the National Museum are two such blades without handles, both from New York. These furnish good evidence that the Copenhagen Museum specimen is an aboriginal tomahawk of the New York Indians, made before the iron ones were adopted. So far as we know it is the only perfect specimen in the world.

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